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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,498	12/01/2003	Donald C. Abbott	28098.1	9998

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EXAMINER	
NGUYEN, DILINH P	

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/724,498	ABBOTT ET AL.	
	Examiner	Art Unit	
	DiLinh Nguyen	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akino et al. (J.P. No. 2000-77593) (previously applied) in view of Huang et al. (U.S. Pat. 5994767) (previously applied) and further in view of Grunwald et al. (U.S. Pat. 3819497) (previously applied).

- Regarding claims 17 and 19, Akino et al. discloses a method for fabricating a leadframe comprising the steps of:

providing a copper leadframe 1 base made of copper 5;

depositing a first layer of nickel 6 onto the copper;

electroplating a layer comprising an alloy palladium 7;

electro plating a second layer of nickel 9, thereby adapting the lead segments for mechanical bending;

electroplating a layer of palladium 7; and

a layer of gold 8 (figs. 1-3).

Akino et al. fails to explicitly show gold selectively plated on segments of the leadframe intended for solder attachment and cleaning the leadframe in alkaline soak;

activating the leadframe by immersing the leadframe into an acid solution and immersing the leadframe into an electrolytic nickel plating solution.

However, Huang et al. disclose a method for fabricating a leadframe comprising the steps of: providing a copper leadframe 30 having a mount pad for an integrated circuit chip 40; a molding compound 46 (cover fig., column 7, lines 43-46) and a plurality of lead segments 30 having their first end near the mounting pad and their second end remote from the mount pad; a copper layer 32; a nickel layer 34; a palladium layer 54 and a gold layer on the lead frame (cover fig.), either over the entire leadframe or selectively only over specific portions of the leadframe (column 2, lines 31-34) thereby would create a visual distinction between the gold plated and unplated leadframe areas for the purpose of making solder connections.

Grunwald et al. disclose a method for fabricating a copper sheet comprising the steps of:

providing a sheet made of copper (column 2, lines 65-66);

cleaning the copper sheet in alkaline soak and electro-cleaning solutions (column 3, lines 4-15);

activating the surface of the copper sheet by immersing the copper sheet into an acid solution (column 3, lines 43-45 and 48-50); and

immersing the activated the copper sheet into a chromating solution including chromic acid and an activator (column 3, lines 51-56) to improve the adhesion for the semiconductor package and reduce complexity of implementation (column 2, lines 53-57).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the process step of Akino et al. by plating gold selectively on segments of the leadframe and activating the surface of the lead frame by immersing the lead frame into an acid solution because as taught by Huang et al. and Grunwald et al., for the purpose of making solder connection and in order to improve the adhesion for the semiconductor package and reduce complexity of implementation.

- Regarding claim 18, it would have been obvious in the art wherein the gold plating of Huang et al. is performed electrolytically or electrolessly.
- Regarding claim 20, Grunwald et al. disclose the process steps are obviously executed in sequency without time delays, yet including intermediate rinsing steps.
- Regarding claim 21, Grunwald et al. disclose the acid solution may be sulfuric acid and hydrochloric acid (column 6, lines 50-55 and column 7, lines 15-17).

3. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (U.S. Pat. 5994767) (previously applied) in view of Grunwald et al. (U.S. Pat. 3819497) (previously applied).

Huang et al. (cover fig.) disclose a method for fabricating a leadframe comprising the steps of: providing a copper leadframe 30 having a mount pad for an integrated circuit chip 40 and a plurality of lead segments 30 having their first end near the mounting pad and their second end relatively remote from the mount pad; a copper layer 32; a nickel layer 34; a palladium layer 54 and a gold layer on the lead frame,

either over the entire leadframe or selectively only over specific portions of the leadframe (column 2, lines 31-34) for the purpose of making solder connections.

Huang et al. fail to disclose the step of cleaning the leadframe in alkaline soak; activating the leadframe by immersing the leadframe into an acid solution and immersing the leadframe into an electrolytic nickel plating solution.

Grunwald et al. disclose a method for fabricating a copper sheet comprising the steps of:

providing a sheet made of copper (column 2, lines 65-66);

cleaning the copper sheet in alkaline soak and electro-cleaning solutions (column 3, lines 4-15);

activating the surface of the copper sheet by immersing the copper sheet into an acid solution (column 3, lines 43-45 and 48-50); and

immersing the activated the copper sheet into a chromating solution including chromic acid and an activator (column 3, lines 51-56). Therefore, it would have been obvious to one having ordinary skill in the art to modify the process step of Huang et al. by cleaning the lead frame in alkaline soak and electro-cleaning solutions; activating the surface of the lead frame by immersing the lead frame into an acid solution because as taught by Grunwald et al., in order to improve the adhesion for the semiconductor package and reduce complexity of implementation (column 2, lines 53-57).

Response to Arguments

Applicant's arguments filed 1/10/06 have been fully considered but they are not persuasive.

- Applicant argues that the Akino et al. reference was supplied in the Japanese language only with no translation included. The rejection is improper on its face and the Akino et al. reference is not available on the present record.

The arguments has been fully considered but it is not persuasive because the Akino et al. reference (2000-77593) had been cited and applied in the cases Serial No. 09/525,105 and 09/589,051 (U.S. Pat. 6376901).

- Applicant argues that Grunwald et al. has nothing whatsoever to do with leadframes.

The argument has been fully consideration but it is not persuasive because Examiner relies on the combined teachings at Huang et al. and Grunwald et al. Huang et al. relied on for showing a lead frame made of copper. Grunwald et al. is relied on for showing a method for fabricating a copper sheet comprising the steps of: activating the surface of the copper sheet by immersing the copper sheet into an acid solution (column 3, lines 43-45 and 48-50); plating a surface layer of copper onto the copper sheet, whereby the layer is inherently deposited in controlled uniformity and consistency (column 4, lines 30-33 and 40-44); and immersing the activated copper sheet into a chromating solution including chromic acid and an activator (column 3, lines 51-56) would converting copper surface atoms into chromate complexes and creating a surface layer comprising chromic and copper reaction products. The Examiner thus regards the Applicant's assertions as constituting evidence that the Applicant has failed to consider as a whole the prior art teachings disclosed by the combining of the references.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a method for fabricating a semiconductor device comprising the steps as set forth above of the copper sheet because as taught by Grunwald et al., into the copper lead frame of Huang et al., in order to improve the adhesion for the semiconductor package and reduce complexity of implementation.

It should be noted that the rejection of claim 22 is not based on anticipation, but rather, are based on obviousness.

- In response to applicant's argument that there is no teaching or suggestion to combine the references, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DLN

HOAI PHAM
PRIMARY EXAMINER